

April 3, 2015  
Project No. 107903003

Mr. James A. Clarke  
Sunburst Capital LLC  
2650 Jamacha Road, Suite 147  
El Cajon, California 92019

Subject: Soil Vapor Survey and Screening-Level Human Health Risk Assessment  
Jo-Ann Fabric  
1680 East Valley Parkway  
Escondido, California

Dear Mr. Clarke:

In accordance with your request, Ninyo & Moore conducted a Soil Vapor Survey (SVS) and performed a Screening-Level Human Health Risk Assessment (HHRA) at the property located at 1680 East Valley Parkway, Escondido, California (site) (Figures 1 and 2). In March 2015, Ninyo & Moore prepared a Phase I Environmental Site Assessment (ESA) for the site and found the following recognized environmental condition (REC):

- The property located at 1654 East Valley Parkway (50 feet west of the site) has been occupied by a drycleaner since at least 1971. The use of chlorinated volatile organic compounds (VOCs) in dry cleaning operations represents a potential vapor intrusion condition at the site.

The SVS and HHRA were performed to evaluate whether chlorinated solvents commonly used in dry cleaning, if present, pose a potential excess carcinogenic risk (ECR) or systemic toxicity to site building occupants. Work was conducted in general accordance with County of San Diego Department of Environmental Health (DEH), Site Assessment and Mitigation (SAM) guidelines. The following sections describe the field activities and risk assessment.

## **FIELD ACTIVITIES**

Soil vapor sampling locations were marked and Underground Service Alert was notified at least 48 hours prior to drilling activities. On March 25, 2015, Ninyo & Moore personnel oversaw the installation of six temporary soil vapor probes. H&P Mobile Geochemistry (H&P), a C-57 licensed drilling company, was subcontracted to perform the work. Six temporary sub-slab soil vapor probes

(SV-1 through SV-6) were installed along the western and eastern interior portions of the site building at locations depicted on Figure 3. For each soil vapor location, a 1/8-inch Nylaflo tubing was installed just below the building slab (approximately six inches below grade) with a hammer drill. After installation and prior to sampling, an equilibration period of at least 30 minutes was observed in accordance with SAM Manual guidelines. After the equilibration period, three purge volumes were removed and a leak test was performed using 1,1-difluoroethane. Samples were collected in 50-milliliter glass syringes for on-site analysis. One replicate sample (SV-2 Rep) was collected for quality assurance/quality control purposes.

Each sample was labeled with pertinent information and transferred, under chain-of-custody protocol to H&P's on-site mobile laboratory for analytical testing. Soil vapor samples were analyzed for VOCs by United States Environmental Protection Agency (USEPA) Method 8260B.

## **ANALYTICAL RESULTS**

Tetrachloroethene (PCE), a dry cleaning solvent, was detected in all six soil vapor locations (and replicate) at a maximum concentration of 18 micrograms per liter ( $\mu\text{g/l}$ ). No other VOCs were detected above their respective laboratory reporting limit. Analytical results are provided in Table 1. A copy of the laboratory analytical report and chain-of-custody documentation is provided in Attachment A.

PCE exceeded the USEPA Region 9 Regional Screening Level (RSL) for Industrial Air (with soil vapor attenuation factor for an existing commercial slab [Table 1]) (USEPA, 2015). The presence of a chemical at concentrations in excess of the RSL does not indicate adverse impacts to human health are occurring or will occur, but suggests that further evaluation of potential human health concerns is warranted. A screening-level HHRA was performed to further evaluate vapor intrusion risks.

## **SCREENING-LEVEL HUMAN HEALTH RISK ASSESSMENT**

The HHRA was conducted to evaluate the potential excess carcinogenic risk and the systemic toxicity to site occupants. The risk calculation was performed using the SVS data and the DEH SAM, Vapor Risk Assessment Model dated November 1999, revised July 29, 2010. For the purposes of this assessment, Level 1, default values were used in the vapor intrusion model.

A complete exposure pathway for chemicals requires four elements: chemical sources, migration routes (i.e., environmental transport), an exposure point for contact (i.e., soil, air or water; or collectively, “media”), and human exposure routes (i.e., oral, dermal, inhalation). A pathway is not complete unless all four elements are present. The source-pathway-receptor relationships provide the basis for the quantitative exposure assessment. Only those complete source-pathway-receptor relationships were included in the toxicity assessment and risk characterization steps.

The complete or potentially complete exposure pathway for this risk assessment is inhalation of vapor-phase VOCs in air. For the inhalation pathway, diffusion of VOCs from soil vapor or contaminated groundwater is the release and transport mechanism, and the exposure point is indoor air, where the receptor can potentially inhale the vapors. Since the site is currently covered by the building foundations and paved parking, the other pathways of exposure, including ingestion and dermal contact, are incomplete and were not considered in the risk assessment.

Based on the results of the SVS, the contaminant of concern (COC) is PCE. The highest PCE concentration in soil vapor was used to perform the risk calculations. Based on the site use (commercial), the risk calculation assumed a commercial/industrial setting. The SAM Vapor Risk Assessment Model, Risk Calculations are provided in Attachment B.

The results of the risk analysis for slab-on-grade construction using the default parameters included in the SAM Vapor Risk Assessment Model indicate that the maximum detected COCs in shallow soil vapor would present a cumulative excess cancer risk (ECR) to an adult in a commercial/industrial setting of approximately  $4.42 \times 10^{-6}$  or approximately 1 in 226,000, which is greater than the threshold ECR of 1 in 1 million (SAM Manual).

The estimated cancer risks were compared to the risk level considered acceptable by federal and state regulatory agencies. The USEPA has established acceptable incremental cancer risk levels to be within the risk range of 1 in 10,000 ( $1.0\text{E-}04$ ) and 1 in 1,000,000 ( $1.0\text{E-}06$ ); risks greater than  $1.0\text{E-}04$  are generally considered unacceptable (USEPA, 1989). The California Environmental Protection Agency (Cal-EPA) has defined a risk of 1 in 100,000 ( $1.0\text{E-}05$ ) as the “no significant level” for carcinogens under California’s Safe Water and Toxic Enforcement Act (Proposition 65) (California Office of Environmental Health Hazard Assessment [OEHHA], 1986). Most California air districts use the  $1.0\text{E-}05$  risk level as the notification trigger level under California’s AB2588 Toxic Hot Spots Program (Cal-EPA Air Resources Board, 1987). Although agencies will exercise caution in determining whether risks within the range of  $1.0\text{E-}04$  and  $1.0\text{E-}06$  require additional investigation or some form of risk management, there is a general precedent that predicted cancer risks that are on the low end of this range will generally be considered acceptable and not warrant further evaluation. The background risk of an American developing cancer is one chance in three (0.3 or  $3\text{E-}01$ ) for every American female and one chance in two (0.5 or  $5\text{E-}01$ ) for every American male (American Cancer Society, 2014).

The cumulative non-cancer health hazard index (HHI) to an adult in a commercial/industrial setting for slab-on-grade construction from the maximum reported concentrations of the COCs in shallow soil vapor was calculated as 0.059. Because the index is less than the non-cancer HHI of 1.0, the non-cancer hazard index for slab-on-grade construction is considered to be less than significant.

## **FINDINGS, OPINIONS, AND RECOMMENDATIONS**

Based on the results of the Phase I and II ESAs, the following findings and opinions are provided:

- PCE, a dry cleaning solvent, was detected in all six soil vapor samples at concentrations ranging from 0.15 to 18  $\mu\text{g/l}$ . Because there is no documentation of PCE being used on-site currently or historically, there is a dry cleaner approximately 50 feet west of the site documented to use PCE, and the highest concentration was found on the west side of the site building, it is our opinion the PCE contamination is from an off-site source, likely the dry cleaner.

- Based on the results of the screening-level HHRA using the default parameters in the SAM Vapor Risk Assessment Model, the PCE concentrations detected in sub-slab soil vapor samples indicate a risk greater than the threshold ECR of 1 in 1 million (SAM Manual). In general, using the default values for input variables results in higher indoor air concentrations and higher incremental risks.
- Ninyo & Moore recommends indoor air sampling to evaluate whether the PCE-impacted soil vapor is migrating through the building slab at the levels predicted in the HHRA model. Based on the results of the indoor air sampling, mitigation measures may be warranted.

We appreciate the opportunity to be of service.

Sincerely,  
**NINYO & MOORE**



Adrian Olivares  
Senior Project Environmental Scientist



Stephan A. Beck, PG 4375  
Manager, Environmental Sciences Division

AO/SB/gg

Attachments: References

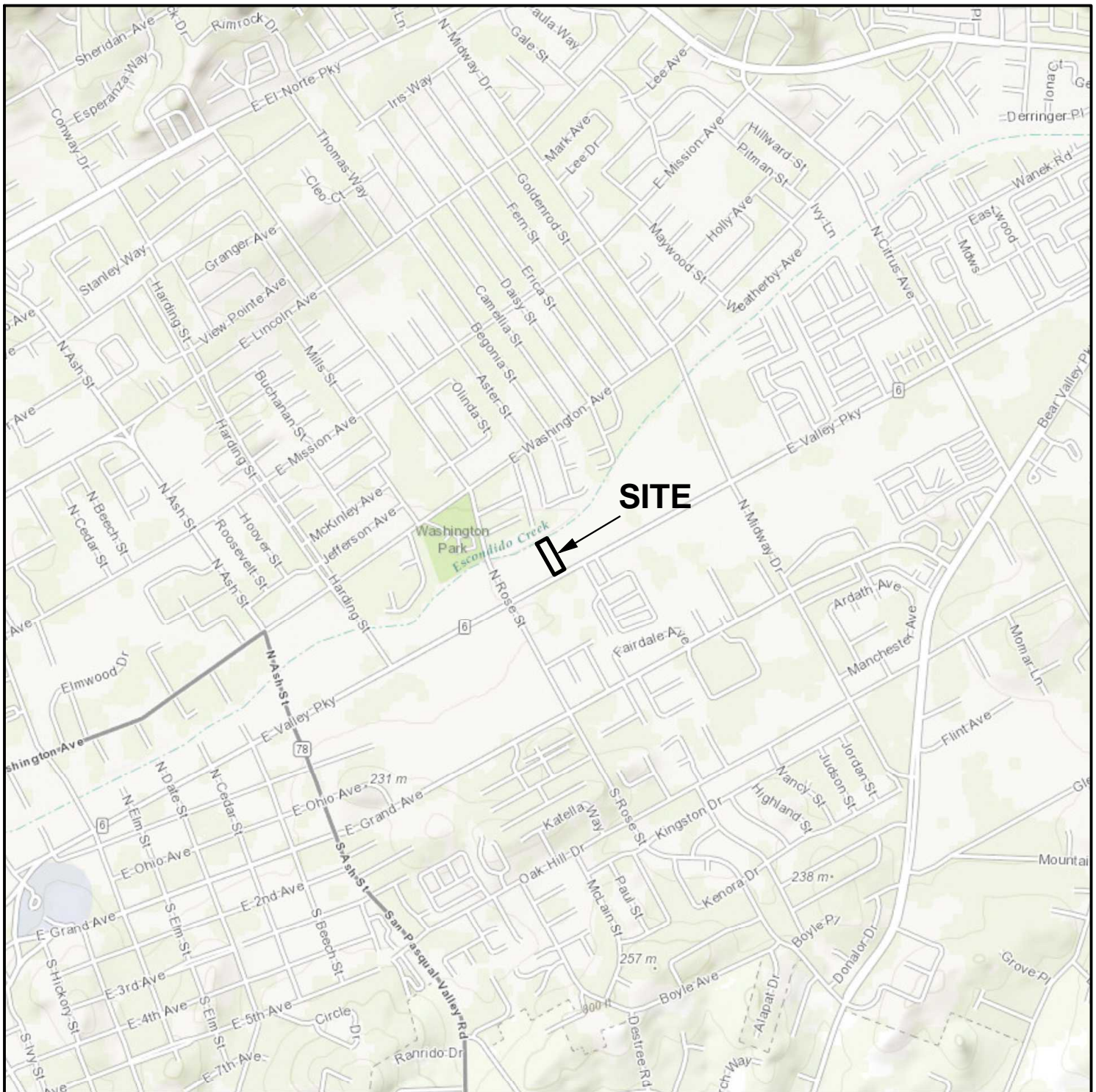
- Figure 1 – Site Location
- Figure 2 – Site and Vicinity
- Figure 3 – Site Plan
- Table 1 – Detected Soil Vapor Analytical Results
- Table 2 – Risk Calculation For Slab-On-Grade Construction
- Attachment A – Laboratory Report
- Attachment B – SAM Vapor Risk Assessment Model Risk Calculations

Distribution: (1) Addressee (via e-mail)

## REFERENCES

- American Cancer Society, 2014, Lifetime Risk of Developing or Dying from Cancer, <http://www.cancer.org/cancer/cancerbasics/lifetime-probability-of-developing-or-dying-from-cancer>: accessed in April.
- California Department of Toxic Substances Control (DTSC), 2011, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance): dated October.
- California Department of Toxic Substances Control (DTSC), Office of Human and Ecological Risk (HERO), 2014, Human Health Risk Assessment, Note 3: dated July 14.
- California Environmental Protection Agency, Air Resources Board, 1987, AB 2588 Air Toxics “Hot Spots” Information and Assessment Act.
- California Office of Environmental Health Hazard Assessment (OEHHA), 1986, Safe Drinking Water and Toxic Enforcement Act (Proposition 65).
- County of San Diego, Department of Environmental Health, Site Assessment and Mitigation Division, 2004, Site Assessment and Mitigation Manual: updated August 2011.
- Ninyo & Moore, 2015, Phase I Environmental Site Assessment, Sunburst Capital LLC, 1680 East Valley Parkway, Escondido, California: dated March 12.
- U.S. Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response. Washington, D.C.
- USEPA, 2015, Regional Screening Level, Summary Table: updated January.

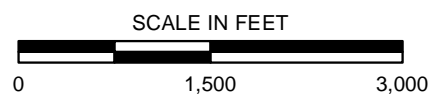




SOURCE: ESRI WORLD TOPO, 2015



MAP INDEX



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

**Ninyo & Moore**

## SITE LOCATION

FIGURE

PROJECT NO.

DATE

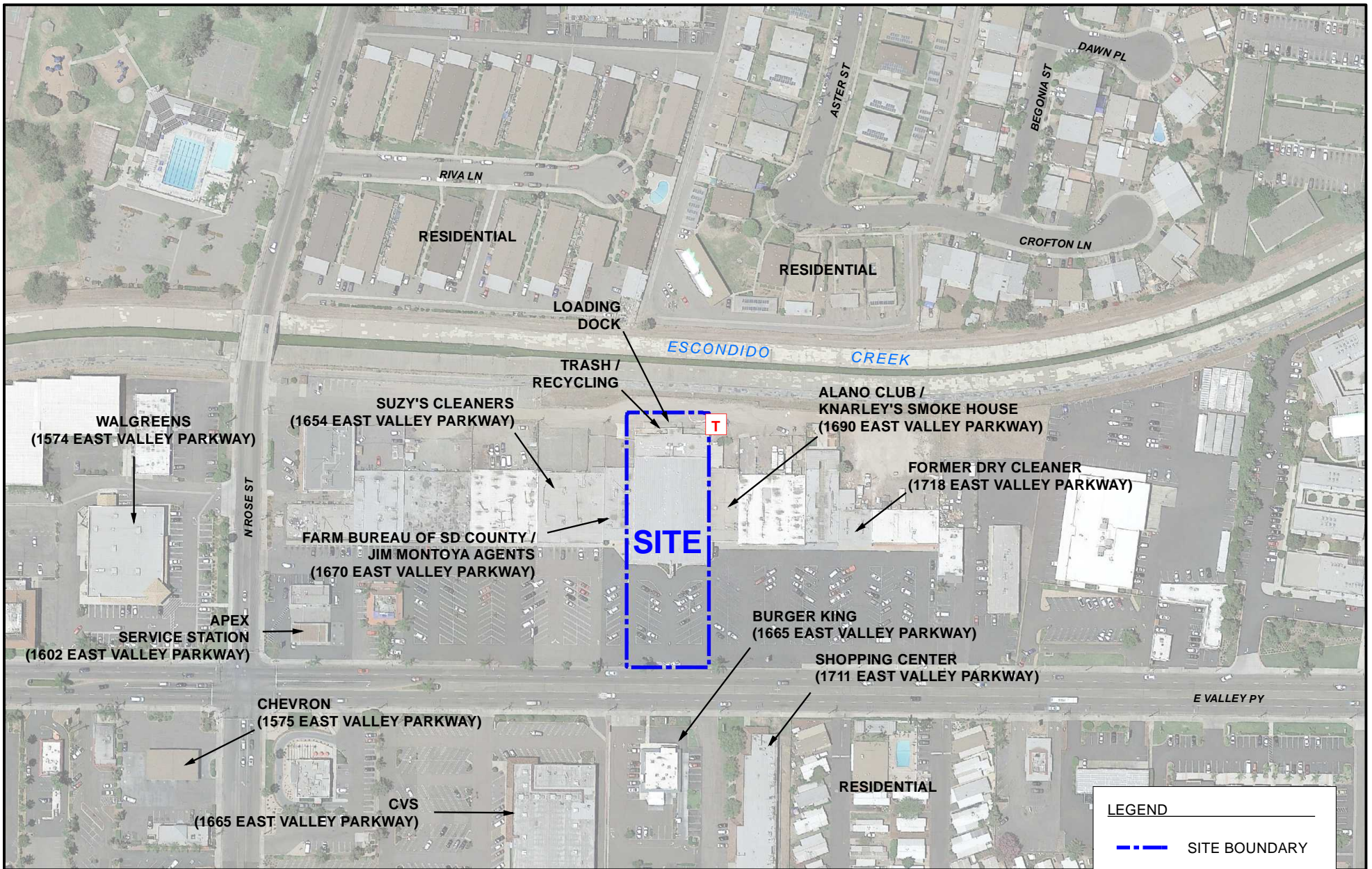
JO-ANN FABRICS  
1680 EAST VALLEY PARKWAY  
ESCONDIDO, CALIFORNIA

107903003

4/15

**1**





#### LEGEND

- SITE BOUNDARY
- T TRANSFORMER

SOURCE: GOOGLE EARTH, 2015



SCALE IN FEET



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

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PROJECT NO.

107903003

DATE

4/15

#### SITE AND VICINITY

JO-ANN FABRICS  
1680 EAST VALLEY PARKWAY  
ESCONDIDO, CALIFORNIA

FIGURE

**2**





**LEGEND**

--- SITE BOUNDARY

SV-6  
△ SOIL VAPOR PROBE

(18) TETRACHLOROETHENE (PCE) CONCENTRATION (ug/L)

REP = REPLICATE SAMPLE  
ug/L = MICROGRAMS PER LITER

SOURCE: GOOGLE EARTH, 2015



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

**Ninyo & Moore**

PROJECT NO.  
107903003

DATE  
4/15

**SITE PLAN**

JO-ANN FABRICS  
1680 EAST VALLEY PARKWAY  
ESCONDIDO, CALIFORNIA

FIGURE

**3**

**Table 1 - Detected Soil Vapor Analytical Results**

Boring / Sample ID	SV-1	SV-2	SV-2 Rep	SV-3	SV-4	SV-5	SV-6	EPA Region 9 Modified Regional Screening Level for Industrial Indoor Air* (µg/ℓ)
Sample Date	3/25/2015							
EPA Method	8260B							
Units	µg/ℓ							
Tetrachloroethene (PCE)	18	2.0	1.2	1.2	1.2	0.32	0.15	0.94

**Notes:**

µg/ℓ = micrograms per liter

\* Regional Screening Level (RSL) Modified with Soil Vapor Attenuation Factor (AF) for commercial sub-slab.

PCE industrial air RSL = 0.047 ug/l

Existing commercial building sub-slab AF = 0.05

$$\text{Modified RSL} = \frac{0.047 \text{ ug/l}}{0.05} = 0.94 \text{ ug/l}$$

**Reference:**

USEPA, 2014, Regional Screening Level, Summary Table: updated May.

**Table 2 - Risk Calculation For Slab-On-Grade Construction**

<b>Detected Analyte</b>	<b>Maximum Concentration (<math>\mu\text{g}/\ell</math>)</b>	<b>ECR</b>	<b>HI</b>
Tetrachloroethene (PCE)	18	4.42E-06	5.89E-02
<b>Total Risk</b>		<b>4.42E-06</b>	<b>0.0589</b>
<b>Threshold Cancer Risk</b>		<b>1.00E-06</b>	<b>1.0</b>

**Notes:**

Risk assessment for slab-on-grade construction was completed using shallow soil gas samples collected on March 25, 2015.

$\mu\text{g}/\ell$  = micrograms per liter

ECR = excess cancer risk

HI = non-cancer hazard index



**ATTACHMENT A**  
**LABORATORY REPORT**

01 April 2015

Mr. Adrian Olivares  
Ninyo & Moore - San Diego  
5710 Ruffin Road  
San Diego, CA 92123



H&P Project: NM032515-L4  
Client Project: 107903003 / 1680 E. Valley Parkway

Dear Mr. Adrian Olivares:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 25-Mar-15 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,



Janis Villarreal  
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

Ninyo & Moore - San Diego  
5710 Ruffin Road  
San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SV-1	E503114-01	Vapor	25-Mar-15	25-Mar-15
SV-2	E503114-02	Vapor	25-Mar-15	25-Mar-15
SV-2 Rep	E503114-03	Vapor	25-Mar-15	25-Mar-15
SV-3	E503114-04	Vapor	25-Mar-15	25-Mar-15
SV-4	E503114-05	Vapor	25-Mar-15	25-Mar-15
SV-5	E503114-06	Vapor	25-Mar-15	25-Mar-15
SV-6	E503114-07	Vapor	25-Mar-15	25-Mar-15



Ninyo & Moore - San Diego  
5710 Ruffin Road  
San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### DETECTIONS SUMMARY

Sample ID: **SV-1**

Laboratory ID: **E503114-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
<b>Tetrachloroethene</b>	<b>18</b>	0.10	ug/l	H&P 8260 SV	

Sample ID: **SV-2**

Laboratory ID: **E503114-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
<b>Tetrachloroethene</b>	<b>2.0</b>	0.10	ug/l	H&P 8260 SV	

Sample ID: **SV-2 Rep**

Laboratory ID: **E503114-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
<b>Tetrachloroethene</b>	<b>1.2</b>	0.10	ug/l	H&P 8260 SV	

Sample ID: **SV-3**

Laboratory ID: **E503114-04**

Analyte	Result	Reporting Limit	Units	Method	Notes
<b>Tetrachloroethene</b>	<b>1.2</b>	0.10	ug/l	H&P 8260 SV	

Sample ID: **SV-4**

Laboratory ID: **E503114-05**

Analyte	Result	Reporting Limit	Units	Method	Notes
<b>Tetrachloroethene</b>	<b>1.2</b>	0.10	ug/l	H&P 8260 SV	

Sample ID: **SV-5**

Laboratory ID: **E503114-06**

Analyte	Result	Reporting Limit	Units	Method	Notes
<b>Tetrachloroethene</b>	<b>0.32</b>	0.10	ug/l	H&P 8260 SV	

Sample ID: **SV-6**

Laboratory ID: **E503114-07**

Analyte	Result	Reporting Limit	Units	Method	Notes
<b>Tetrachloroethene</b>	<b>0.15</b>	0.10	ug/l	H&P 8260 SV	

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Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Volatile Organic Compounds by 8260SV

#### H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
<b>SV-1 (E503114-01) Vapor Sampled: 25-Mar-15 Received: 25-Mar-15</b>									
1,1-Difluoroethane (LCC)	ND	0.50	ug/l	0.05	EC52503	25-Mar-15	25-Mar-15	H&P 8260 SV	
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	1.0	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	1.0	"	"	"	"	"	"	
Benzene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
m,p-Xylene	ND	0.50	"	"	"	"	"	"	
o-Xylene	ND	0.50	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.10	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.50	"	"	"	"	"	"	
<b>Tetrachloroethene</b>	<b>18</b>	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.05	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane  
Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

104 %  
95.7 %  
96.8 %  
100 %

75-125  
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75-125

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Ninyo & Moore - San Diego  
5710 Ruffin Road  
San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Volatile Organic Compounds by 8260SV

#### H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
<b>SV-2 (E503114-02) Vapor Sampled: 25-Mar-15 Received: 25-Mar-15</b>									
1,1-Difluoroethane (LCC)	ND	0.50	ug/l	0.05	EC52503	25-Mar-15	25-Mar-15	H&P 8260 SV	
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	1.0	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	1.0	"	"	"	"	"	"	
Benzene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
m,p-Xylene	ND	0.50	"	"	"	"	"	"	
o-Xylene	ND	0.50	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.10	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.50	"	"	"	"	"	"	
<b>Tetrachloroethene</b>	<b>2.0</b>	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.05	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane  
Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

111 % 75-125 "  
99.3 % 75-125 "  
96.9 % 75-125 "  
102 % 75-125 "



Ninyo & Moore - San Diego  
5710 Ruffin Road  
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Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Volatile Organic Compounds by 8260SV

#### H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
<b>SV-2 Rep (E503114-03) Vapor    Sampled: 25-Mar-15    Received: 25-Mar-15</b>									
1,1-Difluoroethane (LCC)	ND	0.50	ug/l	0.05	EC52503	25-Mar-15	25-Mar-15	H&P 8260 SV	
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	1.0	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	1.0	"	"	"	"	"	"	
Benzene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
m,p-Xylene	ND	0.50	"	"	"	"	"	"	
o-Xylene	ND	0.50	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.10	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.50	"	"	"	"	"	"	
<b>Tetrachloroethene</b>	<b>1.2</b>	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.05	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane  
Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

106 %    75-125    "    "    "    "  
96.0 %    75-125    "    "    "    "  
96.3 %    75-125    "    "    "    "  
98.2 %    75-125    "    "    "    "

Ninyo & Moore - San Diego  
5710 Ruffin Road  
San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Volatile Organic Compounds by 8260SV

#### H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
<b>SV-3 (E503114-04) Vapor Sampled: 25-Mar-15 Received: 25-Mar-15</b>									
1,1-Difluoroethane (LCC)	ND	0.50	ug/l	0.05	EC52503	25-Mar-15	25-Mar-15	H&P 8260 SV	
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	1.0	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	1.0	"	"	"	"	"	"	
Benzene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
m,p-Xylene	ND	0.50	"	"	"	"	"	"	
o-Xylene	ND	0.50	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.10	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.50	"	"	"	"	"	"	
<b>Tetrachloroethene</b>	<b>1.2</b>	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.05	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane  
Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

108 %  
93.7 %  
95.4 %  
99.1 %

75-125  
75-125  
75-125  
75-125

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Ninyo & Moore - San Diego  
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San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Volatile Organic Compounds by 8260SV

#### H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
<b>SV-4 (E503114-05) Vapor Sampled: 25-Mar-15 Received: 25-Mar-15</b>									
1,1-Difluoroethane (LCC)	ND	0.50	ug/l	0.05	EC52503	25-Mar-15	25-Mar-15	H&P 8260 SV	
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	1.0	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	1.0	"	"	"	"	"	"	
Benzene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
m,p-Xylene	ND	0.50	"	"	"	"	"	"	
o-Xylene	ND	0.50	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.10	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.50	"	"	"	"	"	"	
<b>Tetrachloroethene</b>	<b>1.2</b>	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.05	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane  
Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

108 % 75-125 " " " "  
100 % 75-125 " " " "  
96.8 % 75-125 " " " "  
99.5 % 75-125 " " " "



Ninyo & Moore - San Diego  
5710 Ruffin Road  
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Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Volatile Organic Compounds by 8260SV

#### H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
<b>SV-5 (E503114-06) Vapor Sampled: 25-Mar-15 Received: 25-Mar-15</b>									
1,1-Difluoroethane (LCC)	ND	0.50	ug/l	0.05	EC52503	25-Mar-15	25-Mar-15	H&P 8260 SV	
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	1.0	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	1.0	"	"	"	"	"	"	
Benzene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
m,p-Xylene	ND	0.50	"	"	"	"	"	"	
o-Xylene	ND	0.50	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.10	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.50	"	"	"	"	"	"	
<b>Tetrachloroethene</b>	<b>0.32</b>	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.05	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane  
Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

111 % 75-125 " " " "  
97.7 % 75-125 " " " "  
96.0 % 75-125 " " " "  
97.2 % 75-125 " " " "

Ninyo & Moore - San Diego  
5710 Ruffin Road  
San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Volatile Organic Compounds by 8260SV

#### H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
<b>SV-6 (E503114-07) Vapor Sampled: 25-Mar-15 Received: 25-Mar-15</b>									
1,1-Difluoroethane (LCC)	ND	0.50	ug/l	0.05	EC52503	25-Mar-15	25-Mar-15	H&P 8260 SV	
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	1.0	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	1.0	"	"	"	"	"	"	
Benzene	ND	0.10	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
m,p-Xylene	ND	0.50	"	"	"	"	"	"	
o-Xylene	ND	0.50	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	0.10	"	"	"	"	"	"	
Chloroform	ND	0.10	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.10	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.50	"	"	"	"	"	"	
<b>Tetrachloroethene</b>	<b>0.15</b>	0.10	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.10	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.05	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane  
Surrogate: 1,2-Dichloroethane-d4  
Surrogate: Toluene-d8  
Surrogate: 4-Bromofluorobenzene

111 % 75-125 " " " "  
101 % 75-125 " " " "  
99.0 % 75-125 " " " "  
99.1 % 75-125 " " " "

Ninyo & Moore - San Diego  
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Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

**Volatile Organic Compounds by 8260SV - Quality Control**  
**H&P Mobile Geochemistry, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch EC52503 - EPA 5030**

**Blank (EC52503-BLK1)**

Prepared & Analyzed: 25-Mar-15

1,1-Difluoroethane (LCC)	ND	0.50	ug/l
Methyl tertiary-butyl ether (MTBE)	ND	0.50	"
Diisopropyl ether (DIPE)	ND	1.0	"
Ethyl tert-butyl ether (ETBE)	ND	1.0	"
Tertiary-amyl methyl ether (TAME)	ND	1.0	"
Benzene	ND	0.10	"
Toluene	ND	1.0	"
Ethylbenzene	ND	0.50	"
m,p-Xylene	ND	0.50	"
o-Xylene	ND	0.50	"
Tertiary-butyl alcohol (TBA)	ND	5.0	"
Naphthalene	ND	0.10	"
Chloroform	ND	0.10	"
Dichlorodifluoromethane (F12)	ND	0.50	"
1,1-Dichloroethane	ND	0.50	"
1,2-Dichloroethane (EDC)	ND	0.10	"
1,1-Dichloroethene	ND	0.50	"
cis-1,2-Dichloroethene	ND	0.50	"
trans-1,2-Dichloroethene	ND	0.50	"
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.50	"
Methylene chloride (Dichloromethane)	ND	0.50	"
Tetrachloroethene	ND	0.10	"
1,1,2-Trichloroethane	ND	0.50	"
1,1,1-Trichloroethane	ND	0.50	"
Trichloroethene	ND	0.10	"
Trichlorofluoromethane (F11)	ND	0.50	"
Vinyl chloride	ND	0.05	"

Surrogate: Dibromofluoromethane	2.53	"	2.50	101	75-125
Surrogate: 1,2-Dichloroethane-d4	2.28	"	2.50	91.1	75-125
Surrogate: Toluene-d8	2.52	"	2.50	101	75-125
Surrogate: 4-Bromofluorobenzene	2.57	"	2.50	103	75-125

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San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

**Volatile Organic Compounds by 8260SV - Quality Control**  
**H&P Mobile Geochemistry, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch EC52503 - EPA 5030**

**LCS (EC52503-BS1)**

Prepared & Analyzed: 25-Mar-15

Benzene	4.77	0.10	ug/l	5.00		95.4	70-130			
Toluene	4.48	1.0	"	5.00		89.7	70-130			
Ethylbenzene	5.11	0.50	"	5.00		102	70-130			
m,p-Xylene	10.3	0.50	"	10.0		103	70-130			
o-Xylene	5.01	0.50	"	5.00		100	70-130			
Chloroform	5.29	0.10	"	5.00		106	70-130			
Dichlorodifluoromethane (F12)	3.34	0.50	"	5.00		66.8	70-130			
1,1-Dichloroethane	5.03	0.50	"	5.00		101	70-130			
1,2-Dichloroethane (EDC)	5.06	0.10	"	5.00		101	70-130			
1,1-Dichloroethene	3.77	0.50	"	5.00		75.4	70-130			
cis-1,2-Dichloroethene	5.30	0.50	"	5.00		106	70-130			
trans-1,2-Dichloroethene	5.00	0.50	"	5.00		100	70-130			
1,1,2 Trichlorotrifluoroethane (F113)	4.66	0.50	"	5.00		93.1	70-130			
Methylene chloride (Dichloromethane)	4.90	0.50	"	5.00		98.0	70-130			
Tetrachloroethene	5.08	0.10	"	5.00		102	70-130			
1,1,2-Trichloroethane	5.17	0.50	"	5.00		103	70-130			
1,1,1-Trichloroethane	4.57	0.50	"	5.00		91.3	70-130			
Trichloroethene	4.69	0.10	"	5.00		93.8	70-130			
Trichlorofluoromethane (F11)	4.71	0.50	"	5.00		94.3	70-130			
Vinyl chloride	4.07	0.05	"	5.00		81.5	70-130			

Surrogate: Dibromofluoromethane	2.70		"	2.50		108	75-125			
Surrogate: 1,2-Dichloroethane-d4	2.52		"	2.50		101	75-125			
Surrogate: Toluene-d8	2.47		"	2.50		98.9	75-125			
Surrogate: 4-Bromofluorobenzene	2.61		"	2.50		104	75-125			



Ninyo & Moore - San Diego  
5710 Ruffin Road  
San Diego, CA 92123

Project: NM032515-L4  
Project Number: 107903003 / 1680 E. Valley Parkway  
Project Manager: Mr. Adrian Olivares

Reported:  
01-Apr-15 09:15

### Notes and Definitions

LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

### Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at [www.handpmg.com/about/certifications](http://www.handpmg.com/about/certifications).

# VAPOR / AIR Chain of Custody

DATE: 3/25/15  
Page 1 of 1

Lab Client and Project Information			
Lab Client/Consultant: <u>NINYO &amp; MOORE</u>	Project Name / #: <u>107903003</u>		
Lab Client Project Manager: <u>ADRIAN OLIVARES</u>	Project Location: <u>1680 E. VALLEY PKWY, ESCONCADO</u>		
Lab Client Address: <u>5710 RUFFIN RD.</u>	Report E-Mail(s): <u>AOLIVARES@NINYOANDMOORE.COM</u>		
Lab Client City, State, Zip: <u>SAN DIEGO, CA 92123</u>			
Phone Number: <u>858-576-1000</u> <u>X. 11257</u>			

Reporting Requirements	Turnaround Time	Sampler Information
<input checked="" type="checkbox"/> Standard Report <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input checked="" type="checkbox"/> Excel EDD <input type="checkbox"/> Other EDD: _____ <input type="checkbox"/> CA Geotracker Global ID: _____	<input type="checkbox"/> 5-7 day Std <input type="checkbox"/> 24-Hr Rush <input type="checkbox"/> 3-day Rush <input checked="" type="checkbox"/> Mobile Lab <input type="checkbox"/> 48-Hr Rush <input type="checkbox"/> Other: _____	Sampler(s): <u>DONALD J. MILLAR</u> Signature: <u>[Signature]</u> Date: <u>3/25/15</u>

Sample Receipt (Lab Use Only)	
Date Rec'd: <u>3/25/15</u>	Control #: <u>150247.00/01</u>
H&P Project # <u>NM032515-L4</u>	
Lab Work Order # <u>E503114</u>	
Sample Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Notes Below	
Receipt Gauge ID: _____	Temp: <u>20°C</u>
Outside Lab: _____	
Receipt Notes/Tracking #: _____	
Lab PM Initials: _____	

## Additional Instructions to Laboratory:

☒ Check if Project Analyte List is Attached

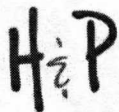
\* Preferred VOC units (please choose one):

☒ µg/L   ☐ µg/m³   ☐ ppbv   ☐ ppmv

8260 SAM A + B  
STD RL  
EC52503

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15	VOCs Short List / Project List <input checked="" type="checkbox"/> 8260SV <input type="checkbox"/> TO-15	Oxygenates <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15	Naphthalene <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> TO-17m	TPHv as Gas <input type="checkbox"/> 8260SV/m <input type="checkbox"/> TO-15m	TPHv as Diesel (sorbet tube) <input type="checkbox"/> TO-17m	Aromatic/Aliphatic Fractions <input type="checkbox"/> 8260SV/m <input type="checkbox"/> TO-15m	Leak Check Compound <input checked="" type="checkbox"/> DFA <input type="checkbox"/> IPA <input type="checkbox"/> He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 <input type="checkbox"/> CO2 <input type="checkbox"/> O2 <input type="checkbox"/> N2			
SV-1	SV-1	3/25/15	910	SS	GLASS SYRINGE				✓						✓					
SV-2	SV-2		930	SS					✓						✓					
SV-2 REP	SV-2		932	SS					✓						✓					
SV-3	SV-3		957	SS					✓						✓					
SV-4	SV-4		1000	SS					✓						✓					
SV-5	SV-5		1041	SS					✓						✓					
SV-6	SV-6		1045	SS					✓						✓					

Approved/Relinquished by: <u>[Signature]</u>	Company: <u>NINYO &amp; MOORE</u>	Date: <u>3/25/15</u>	Time: <u>1150</u>	Received by: <u>DONALD J. MILLAR</u>	Company: <u>H&amp;P</u>	Date: <u>3/25/15</u>	Time: <u>1150</u>
Approved/Relinquished by: _____	Company: _____	Date: _____	Time: _____	Received by: _____	Company: _____	Date: _____	Time: _____
Approved/Relinquished by: _____	Company: _____	Date: _____	Time: _____	Received by: _____	Company: _____	Date: _____	Time: _____



H&P Mobile Geochemistry, Inc.  
2470 Impala Drive, Carlsbad, CA 92010  
Field Office in Signal Hill, CA (Los Angeles)  
Ph: 800-834-9888 www.handpmg.com

**H&P Method 8260SV (Modified EPA 8260B)**  
**Soil Vapor VOC List per SD SAM**

<b>Compound - SAM List A Fuels</b>	<b>CAS #</b>	<b>Standard RL Vapor (µg/L)</b>
Methyl tertiary-butyl ether (MTBE)	1634-04-4	0.5
Diisopropyl ether (DIPE)	108-20-3	1.0
Ethyl tertiary-butyl ether (ETBE)	637-92-3	1.0
Benzene	71-43-2	0.1
Tertiary-amyl methyl ether (TAME)	994-05-8	1.0
Toluene	108-88-3	1.0
Ethylbenzene	100-41-4	0.5
m,p-Xylene	179601-23-1	0.5
o-Xylene	95-47-6	0.5
Naphthalene	91-20-3	0.1
Tertiary-butyl alcohol (TBA)	75-65-0	5.0

<b>Compound - SAM List B Solvents</b>	<b>CAS #</b>	<b>Standard RL Vapor (µg/L)</b>
Dichlorodifluoromethane (F12)	75-71-8	0.5
Vinyl chloride	75-01-4	0.05
Trichlorofluoromethane (F11)	75-69-4	0.5
1,1-Dichloroethene	75-35-4	0.5
1,1,2-Trichlorotrifluoroethane (F113)	76-13-1	0.5
Methylene chloride (Dichloromethane)	75-09-2	0.5
trans-1,2-Dichloroethene	156-60-5	0.5
1,1-Dichloroethane	75-34-3	0.5
cis-1,2-Dichloroethene	156-59-2	0.5
Chloroform	67-66-3	0.1
1,1,1-Trichloroethane	71-55-6	0.5
1,2-Dichloroethane (EDC)	107-06-2	0.1
Trichloroethene	79-01-6	0.1
1,1,2-Trichloroethane	79-00-5	0.5
Tetrachloroethene	127-18-4	0.1

**Leak Check Compound**

1,1-Difluoroethane (LCC)	75-37-6	0.5
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# Log Sheet: Soil Vapor Sampling with Syringe

FMS004  
Revision: 2  
Revised: 12/4/14  
Effective: 1/1/15  
Page 1 of 1

H&P Project #: NM 032515-L4  
Site Address: 1686 E. VALLEY PKWY  
Consultant: NINYO & MOORE  
Consultant Rep(s): ADRIAN OLIVARES

Date: 3/25/15  
Page: 1 of 1  
H&P Rep(s): DJM D. Miller  
KURT SCHINDLER

Reviewed: AB  
Scanned: sn

Purge Volume Calculation			
PVT Probe ID, if applicable:	<u>SV-1</u>		
Tubing:	Length: <u>2'</u>	Diameter: <u>1/8"</u>	1 Volume: <u>2</u>
Sand Pack:	Height: <u>3"</u>	Diameter: <u>1"</u>	1 Volume: <u>15</u>
Dry Bentonite:	Height: <u>1"</u>	Diameter: <u>1"</u>	1 Volume: <u>6</u>
PVT Increments:	<u>1</u> PV = <u>24</u> <u>3</u> PV = <u>71</u> <u>10</u> PV = <u>238</u>		
PV Amount Selected:	<u>3PV</u> Selected by: <u>DEFAULT</u>		

Sample Volume	
<input checked="" type="checkbox"/> 50cc Glass Syringe	<input type="checkbox"/> 100cc Glass Syringe <input type="checkbox"/> Other _____
Leak Check Compound	
<input checked="" type="checkbox"/> 1,1-DFA	<input type="checkbox"/> 1,1,1,2-TFA <input type="checkbox"/> IPA <input type="checkbox"/> Other _____
A cloth saturated with LCC is placed around tubing connections and at the probe seal. This is done prior to every soil vapor sample collected unless otherwise noted in the field notes below.	

Sample Information				Probe Specs								Collection Information				
	Point ID	Syringe ID	Date	Sample Time	Probe Depth (ft)	Tubing Length (ft)	Tubing Dia (in.)	Sand Pack Ht (in.)	Sand Pack Dia (in.)	Dry Bent. Ht (in.)	Dry Bent. Dia (in.)	Purge Vol (mL)	Shut-in Test (✓=Pass)	Flow Rate (mL/min)	Probe Vacuum ("Hg)	Field Notes
1	SV-1	187	3/25	910	SS	2	1/8	3"	1"	1"	1"	71	✓	<200	Ø	✓
2	SV-2	190	3/25	930	SS	2	1/8	3"	1"	1"	1"	71	✓	<200	Ø	✓
3	SV-2 REP	174	3/25	932	SS	2	1/8	3"	1"	1	1	121	✓	<200	Ø	✓
4	SV-3	151	3/25	957	SS	2	1/8	3	1	1	1	71	✓	<200	Ø	✓
5	SV-4	188	3/25	1000	SS	2	1/8	3	1	1	1	71	✓	<200	Ø	✓
6	SV-5	190	10/4/15	1041	SS	2	1/8	3	1	1	1	71	✓	<200	Ø	✓
7	SV-6	187	3/25	1045	SS	2	1/8	3	1	1	1	71	✓	<200	Ø	✓
8																
9																
10																
11																
12																

DJM  
3/25

Site Notes (e.g. weather, visitors, scope deviations, health & safety issues, etc.):

3pv DEFAULT

**ATTACHMENT B**

**SAM VAPOR RISK ASSESSMENT MODEL RISK CALCULATIONS**



**SITE ASSESSMENT & MITIGATION VAPOR RISK ASSESSMENT MODEL**  
**Input Data**

**Page 1-2**  
Version: November 1999  
Revised 07/29/2010

**Case Name:**

1680 East Valley Parkway, Escondido, CA

**CHEMICAL OF CONCERN:**

**Enter Chemical Name =**

tetrachloroethene (PCE)

- |  |   |
|--|---|
| <b>C11</b> benzene                         | <b>E11</b> dichloromethane (methylene chloride) |
| <b>C12</b> benzo(a)pyrene                  | <b>E12</b> ethylbenzene                         |
| <b>C13</b> carbon tetrachloride            | <b>E13</b> naphthalene                          |
| <b>C14</b> chlorobenzene                   | <b>E14</b> methyl tertiary butyl ether (MTBE)   |
| <b>C15</b> chloroethane (ethyl chloride)   | <b>E15</b> tetrachloroethene (PCE)              |
| <b>C16</b> chloromethane (methyl chloride) | <b>E16</b> toluene                              |
| <b>C17</b> 1,2-dichlorobenzene             | <b>E17</b> 1,1,1-trichloroethane                |
| <b>C18</b> 1,3-dichlorobenzene             | <b>E18</b> 1,1,2-trichloroethane                |
| <b>C19</b> 1,4-dichlorobenzene             | <b>E19</b> trichloroethene (TCE)                |
| <b>C20</b> 1,1-dichloroethene (1,1-DCE)    | <b>E20</b> trichloromethane (chloroform)        |
| <b>C21</b> trans-1,2-dichloroethene        | <b>E21</b> vinyl chloride                       |
| <b>C22</b> 1,1-dichloroethane (1,1-DCA)    | <b>E22</b> xylene                               |
| <b>C23</b> 1,2-dichloroethane (1,2-DCA)    |   |

**Chemical Mixture (if app.) =**

- |                     |                      |
|---------------------|----------------------|
| <b>C27</b> Gasoline | <b>E27</b> Fuel Oil  |
| <b>C28</b> Kerosene | <b>E28</b> Waste Oil |
| <b>C29</b> Diesel   |                      |

**If compound is not listed then data must be entered into the site-specific field.**

<b>SITE SPECIFIC INFORMATION</b>			<b>Site-Specific</b>	<b>Value Used</b>
Mole fraction	dimensionless	MF		0.0000
Temperature	K	T		293
Water concentration (chemical)	ug/l	C <sub>w</sub>		0
Soil concentration (chemical)	mg/kg	C <sub>t</sub>		0
Soil concentration (TPH/TRPH)	mg/kg	C <sub>t</sub>		0
Soil gas concentration (measured)	mg/m3 (ug/l)	C <sub>sg</sub> (m)	18	18
Depth of contamination or Soil Gas	m	X	0.2	0.2

# SITE ASSESSMENT & MITIGATION VAPOR RISK ASSESSMENT MODEL

Data Input

Page 2-2

Version: November 1999

Revised 07/29/2010

<b>CHEMICAL PROPERTIES</b>			<b>Site Specific</b>	<b>Value Used</b>
Henry's Law Constant	dimensionless	H		0.75
Vapor pressure	atm	VP		0.019
Molecular weight (chemical)	mg/mole	MW		166,000
Molecular weight (mixture)	mg/mole	MW(m)		#N/A
Universal gas constant	atm-m3/mole-K	R	XXXXXXXXXX	8.20E-05
Diffusion coefficient in air	cm2/sec	D <sub>a</sub>		0.072
Organic carbon partitioning coef.	cm3/gm	K <sub>oc</sub>		270
<b>SOIL PROPERTIES</b>				
Total porosity	dimensionless	θ		0.3
Air-filled porosity	dimensionless	θ <sub>a</sub>		0.2
Water-filled porosity	dimensionless	θ <sub>w</sub>	XXXXXXXXXX	0.1
Bulk density (dry)	gm/cc	r <sub>b</sub>		1.8
Weight fraction of organic carbon	dimensionless	f <sub>oc</sub>		0.01
<b>BUILDING SPECIFICATIONS</b>				
Floor area of building	m2	A		1
% of floor area that flux occurs	dimensionless			100%
Interior Height of building	m	R <sub>h</sub>		2.44
Exchange rate of air	exchanges/hr	E		0.83
Slab Attenuation factor	dimensionless	S <sub>b</sub>		0.1
<b>OUTDOOR AIR COMPONENT</b>				
Downwind contamination length	m	L		0
Wind speed	m/hr	u		16000
Height of building openings	m	h		2
<b>EXPOSURE SCENARIO</b> Default values are for Industrial Uses				
Body weight	kg	BW		70
Inhalation rate	m3/day	IR		20
Exposure duration	yrs	ED		25
Hours per day	hr/day			12
Days per week	days/week			5
Weeks per year	weeks/yr			50
<b>HEALTH RISK FACTORS</b>				
Reference dose	mg/kg-day	RfD		0.01
Slope factor (potency)	1/(mg/kg-day)	SF		0.021

# SITE ASSESSMENT & MITIGATION VAPOR RISK ASSESSMENT MODEL

## Risk Calculations

Page 1-2

Version: November 1999

Revised 07/29/2010

**Case Name:** 1680 East Valley Parkway, Escondido, CA

**Chemical:** tetrachloroethene (PCE)

### Variable Descriptions

### Units

#### CALCULATION OF SOIL GAS CONCENTRATION

##### **A. SOURCE - Free Product/Soil>100mg/kg.**

Mole fraction	MF	=	0.00E+00	dimensionless
Molecular weight	MW	=	1.66E+05	mg/mole
Vapor pressure	VP	=	1.90E-02	atm
Universal gas constant	R	=	8.20E-05	atm-m3/mole-K
Temperature	T	=	2.93E+02	K
<b>Calculated soil gas concentration</b>	<b>C<sub>sg</sub>(fp)</b>	=	<b>0.00E+00</b>	<b>mg/m3</b>

##### **B. SOURCE - Groundwater**

Water contamination level	C <sub>w</sub>	=	0.00E+00	ug/l
Henry's Law Constant	H	=	7.50E-01	dimensionless
<b>Calculated soil gas concentration</b>	<b>C<sub>sg</sub>(gw)</b>	=	<b>0.00E+00</b>	<b>mg/m3</b>

##### **C. SOURCE - Soil < 100 mg/kg**

Soil contamination level	C <sub>t</sub>	=	0.00E+00	mg/kg
Henry's Law Constant	H	=	7.50E-01	dimensionless
Bulk density (dry)	ρ <sub>b</sub>	=	1.80E+00	gm/cc
Air-filled porosity	θ <sub>a</sub>	=	2.00E-01	dimensionless
Water-filled porosity	θ <sub>w</sub>	=	1.00E-01	dimensionless
Soil/water distribution coef.	K <sub>d</sub>	=	2.70E+00	cm3/gm
<b>Calculated soil gas concentration</b>	<b>C<sub>sg</sub>(s)</b>	=	<b>0.00E+00</b>	<b>mg/m3</b>

##### **D. SOURCE - Measured Soil Gas**

<b>Measured soil gas concentration</b>	<b>C<sub>sg</sub>(m)</b>	=	<b>1.80E+01</b>	<b>mg/m3 (ug/l)</b>
--	--------------------------	---	-----------------	---------------------

##### **E. SOIL GAS CONCENTRATION USED IN RISK CALCULATIONS >>>>**

**1.80E+01 mg/m3**

#### DIFFUSIVE TRANSPORT UPWARD IN UNSATURATED ZONE

Total porosity	θ	=	3.00E-01	dimensionless
Air-filled porosity	θ <sub>a</sub>	=	2.00E-01	dimensionless
Diffusion coefficient in air	D <sub>a</sub>	=	7.20E-02	cm2/sec
<b>Effective diffusion coefficient</b>	<b>D<sub>e</sub></b>	=	<b>3.76E-03</b>	<b>cm2/sec</b>
Depth of contamination or Csg	X	=	2.00E-01	m
<b>Calculated Flux</b>	<b>F<sub>x</sub></b>	=	<b>1.22E-01</b>	<b>mg/m2-hour</b>

# SITE ASSESSMENT & MITIGATION VAPOR RISK ASSESSMENT MODEL

## Risk Calculations

Page 2-2

Version: November 1999

Revised 07/29/2010

Case Name: 1680 East Valley Parkway, Escondido, CA

### CALCULATING VAPOR CONCENTRATION IN BUILDING

#### A. INDOOR AIR COMPONENT

Floor area of building	A	=	1.00E+00	m2
% of floor area that flux occurs			1.00E+00	dimensionless
Slab Attenuation factor	S <sub>b</sub>	=	1.00E-01	dimensionless
Flux area within building	A <sub>f</sub>	=	<b>1.00E-01</b>	m2
Interior Height of building	R <sub>h</sub>	=	2.44E+00	m
Volume of building	V	=	<b>2.44E+00</b>	m3
Exchange rate of air	E	=	8.30E-01	exchanges/hr
Ventilation rate	Q	=	<b>2.03E+00</b>	m3/hr
<b>Indoor air component</b>	<b>C<sub>i</sub></b>	=	<b>6.02E-03</b>	<b>mg/m3</b>

#### B. OUTDOOR AIR COMPONENT

Downwind contamination length	L	=	0.00E+00	m
Wind speed	u	=	1.60E+04	m/hr
Height of building openings (or height of breathing zone)	h	=	2.00E+00	m
<b>Outdoor air component</b>	<b>C<sub>o</sub></b>	=	<b>0.00E+00</b>	<b>mg/m3</b>

#### C. TOTAL INDOOR AIR CONCENTRATION

<b>C<sub>t</sub></b>	=	<b>6.02E-03</b>	<b>mg/m3</b>
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### EXPOSURE SCENARIO

Body weight	BW	=	7.00E+01	kg
Inhalation rate	IR	=	2.00E+01	m3/day
Exposure duration	ED	=	2.50E+01	yrs
Hours per day	conversion	=	1.20E+01	hr/day
Exposure time	ET	=	<b>5.00E-01</b>	hr/24 hours
Days per week	conversion	=	5.00E+00	days/week
Weeks per year	conversion	=	5.00E+01	weeks/yr
Exposure frequency	EF	=	<b>2.50E+02</b>	days/yr
Averaging Time (carc. risk)	AT	=	2.56E+04	days
Averaging Time (non-carc. risk)	AT	=	<b>9.13E+03</b>	days
<b>Chemical Intake (carc. risk)</b>	<b>IT<sub>c</sub></b>	=	<b>2.10E-04</b>	<b>mg/kg-day</b>
<b>Chemical Intake (non-carc. risk)</b>	<b>IT<sub>nc</sub></b>	=	<b>5.89E-04</b>	<b>mg/kg-day</b>

### NON-CARCINOGENIC RISK (Chronic Risk)

Chemical Intake (non-carc. risk)	IT <sub>nc</sub>	=	5.89E-04	mg/kg-day
Reference dose	RfD	=	1.00E-02	mg/kg-day
<b>Hazard Index</b>	<b>HI</b>	=	<b>5.89E-02</b>	

### CARCINOGENIC RISK

Chemical Intake (carc. risk)	IT <sub>c</sub>	=	2.10E-04	mg/kg-day
Slope factor (potency)	SF	=	2.10E-02	1/(mg/kg-day)
<b>Cancer Risk</b>	<b>Risk</b>	=	<b>4.42E-06</b>	